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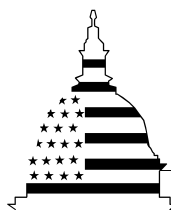
Report to the Subcommittee on Coast  
Guard and Maritime Transportation,  
Committee on Transportation and  
Infrastructure, House of Representatives

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October 2001

## COAST GUARD

# Update on Marine Information for Safety and Law Enforcement System



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## Report Documentation Page

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<b>Abstract</b> Over the last decade, the United States Coast Guard (USCG) has experienced difficulties in acquiring the Marine Information for Safety and Law Enforcement (MISLE) system information system to track marine safety and law-enforcement activities involving commercial and recreational vessels. In 1999, the Coast Guard terminated a contract to acquire MISLE, after spending about 4 years and \$26 million, and is instead developing the system at its Operations Systems Center. As you requested, our objective was to provide an update on MISLEs status, plans, and technical and programmatic risks.		
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## COAST GUARD

### Update on Marine Information for Safety and Law Enforcement System

Highlights of GAO-02-11, a report to the Subcommittee on Coast Guard and Maritime Transportation, House Committee on Transportation and Infrastructure

#### Why GAO Did This Study

The Coast Guard is developing a Web-based information system to replace an aging computer system that it uses to track safety and law-enforcement actions—such as inspections, drug interdiction, and oil spill assistance—involving commercial and recreational vessels. In 1995, the Coast Guard awarded a contract to develop the new system, called MISLE. After the project encountered cost and schedule problems, development responsibility was transferred to the Coast Guard's systems development center in 1999, and the contract terminated after about \$26 million had been spent.

The Coast Guard's history of systems development problems and information technology weaknesses prompted the Subcommittee to ask GAO to review MISLE's current status and risks.

#### What GAO Recommends

GAO is making several recommendations in the four key areas of system requirements, software testing, transition planning, and risk mitigation.

In comments on a draft of our report, Coast Guard officials generally agreed with GAO's recommendations, but noted that some of the risks were "tradeoff decisions," necessary to deliver an initial version of MISLE.

#### What GAO Found

The Coast Guard has made progress since taking over its Marine Information for Safety and Law Enforcement (MISLE) system development; it is now poised to deploy the system with limited capabilities. But much remains to be accomplished in order to deliver the complete system, with only about \$11 million of its \$61 million estimate remaining.

MISLE is facing risks in four key areas:

- **Changing system requirements.** MISLE requirements have repeatedly changed; several have been dropped, and others postponed to later development phases due to problems found during testing and the Coast Guard's emphasis on replacing its current system as soon as possible. Other requirements are being added or accelerated. Such a continually changing scenario increases the risk that MISLE will fall short of user needs.
- **Software testing.** The Coast Guard undertook risky software testing practices in that it deferred testing some functions and did not resolve all critical problems uncovered before moving on to the next testing stage. This approach increases the likelihood that the system will not perform as expected and/or may take longer to develop than anticipated.
- **Transition planning.** Deployment of MISLE involves planning for accurately moving data from the older system and training system users. However, critical transition plans are not yet complete. Beyond adding to possible delays, the absence of transition plans and insufficient training increase the chance of user discomfort with the new system.
- **Risk management.** Finally, the Coast Guard's risk management approach has been ineffective: risks were not assigned severity ratings, and not all have been prioritized. Further, the Coast Guard has not developed detailed mitigation plans for all significant risks.

Unless these challenges are successfully addressed, performance shortcomings, cost escalation, and schedule delay are likely.



United States General Accounting Office  
Washington, D.C. 20548

October 17, 2001

The Honorable Frank LoBiondo  
Chairman  
The Honorable Corrine Brown  
Ranking Minority Member  
Subcommittee on Coast Guard and Maritime Transportation  
Committee on Transportation and Infrastructure  
House of Representatives

Over the last decade, the United States Coast Guard (USCG) has experienced difficulties in acquiring the Marine Information for Safety and Law Enforcement (MISLE) system—an information system to track marine safety and law-enforcement activities involving commercial and recreational vessels. In 1999, the Coast Guard terminated a contract to acquire MISLE, after spending about 4 years and \$26 million, and is instead developing the system at its Operations Systems Center. As you requested, our objective was to provide an update on MISLE’s status, plans, and technical and programmatic risks.

To fulfill this objective, we evaluated MISLE project plans, costs, and schedules by comparing original and current job management documents. We also assessed technical and programmatic risks facing the MISLE acquisition and USCG’s plans for addressing those risks. We performed our work from May through September 2001, in accordance with generally accepted government auditing standards. USCG officials provided us with comments on a draft of this report; they are discussed in the “Agency Comments” section.

On September 18, 2001, we provided a detailed briefing to your office on the results of this work. The briefing slides are included in appendix I. The purpose of this letter is to provide the published briefing slides to you and to officially transmit our recommendations to the Secretary of Transportation.

In brief, we reported that USCG has made progress in developing MISLE and was poised to deploy a minimum level of functionality in November 2001. However, the system was several months behind schedule, and USCG had already spent most of the \$61 million acquisition cost estimate—most of it on the original contract. With only about \$11 million remaining, much remains to be done to deliver the complete system. In its efforts to develop and deploy a complete MISLE system, USCG faces significant

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challenges and risks in several areas, including managing system requirements and user expectations, testing the system, transitioning to an operational system, and managing program risks. We made specific recommendations to address these risks.

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## Recommendations

To mitigate USCG's MISLE risks, we recommend that the Secretary of Transportation direct the USCG Commandant to ensure that the appropriate officials complete the following actions.

In the system requirements area,

- define and prioritize, in conjunction with system users, all needed system functions, corrections, and enhancements that must occur to meet valid user needs; and
- develop cost and schedule estimates for providing these functions, corrections, and enhancements.

In the software testing area,

- close all critical problems before initiating the next state of testing.

In the area of transition planning,

- finalize and implement Vessel Documentation System (VDS) transition plans, and
- develop and implement VDS training materials.

In the risk mitigation area,

- develop a single list of system risks,
- evaluate system risks to determine their severity and prioritize these risks,
- develop and implement comprehensive mitigation strategies for each of the risks, and
- regularly oversee the status of risks and risk mitigation efforts to determine whether additional mitigation activities are warranted.

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## Agency Comments

We provided drafts of our briefing and this report to Department of Transportation and USCG officials, including representatives of the Office of the Secretary of Transportation and the USCG Acquisition Management Office. We met with USCG officials to obtain their comments on our drafts. These officials generally agreed with our recommendations, but characterized the changing requirements and testing issues we raised as “tradeoff decisions,” necessary to deliver an initial version of MISLE. USCG officials also noted that, given the recent terrorist attacks, MISLE deployment will likely be delayed until at least December 2001.

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We are sending copies of this report to the Secretary of Transportation, the USCG Commandant, the Director of the Office of Management and Budget, and other interested parties. Copies will also be made available to others upon request.

Should you or your staffs have any questions concerning this report, please contact me at (202) 512-6240 or by e-mail at [koontz1@gao.gov](mailto:koontz1@gao.gov). Nabajyoti Barkakati, Barbara Collier, Michael Fruitman, Colleen Phillips, Margaret Sullivan, and Glenda Wright were major contributors to this report.



Linda D. Koontz  
Director, Information Management Issues

# GAO's September 18, 2001, Briefing



## **United States Coast Guard's (USCG) Marine Information for Safety and Law Enforcement (MISLE) System**

*An Update*

Briefing for Staff  
Subcommittee on Coast Guard and Maritime Transportation  
Committee on Transportation and Infrastructure  
House of Representatives

September 18, 2001





## Briefing Outline

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- Objective, Scope, and Methodology
- MISLE Background
- MISLE Status and Plans
- Key Risk Areas
  - System requirements
  - Software testing
  - Transition planning
  - Risk management
- Conclusions
- Recommendations
- Agency Comments and Our Evaluation



## Objective, Scope, and Methodology

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### Objective

To provide an update on MISLE's status, plans, and technical and programmatic risks

### Scope and Methodology

We evaluated MISLE project plans, costs, and schedules by comparing original and current job management documents. We also assessed technical and programmatic risks facing the MISLE acquisition, as well as USCG's plans for addressing those risks, by evaluating USCG program documents, comparing them to accepted system engineering principles, and interviewing project officials, developers, and system users. Further, we reviewed plans for future MISLE enhancements and discussed these enhancements with system users and developers.

We conducted our review at USCG headquarters in Washington, D.C., and at USCG's Operations Systems Center and National Vessel Documentation Center in the Martinsburg, WV, area. We conducted our work from May through September 2001, in accordance with generally accepted government auditing standards.



## MISLE Background Overview

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MISLE is intended to be a Web-based information system for entering and obtaining data on Coast Guard activities concerning commercial and federally documented recreational vessels in support of USCG's marine safety and law enforcement missions.

A software-intensive system, the MISLE project also includes the purchase of hardware, including network servers and data storage devices.

MISLE is to support over 5000 system users at about 550 sites using the existing Coast Guard intranet.



## MISLE Background Overview (cont'd)

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In the mid-1990s, MISLE was envisioned to develop and integrate two major systems—the Marine Safety Network and the Vessel Identification and Documentation System—and to integrate them with a third, already developed system, the Law Enforcement Information System II.

Since then, however, this concept has evolved. A description of the subsystems and recent changes to these subsystems are discussed below:

- **Marine Safety Network (MSN)**  
a system to allow Coast Guard personnel to input and obtain information on USCG marine safety activities, such as vessel inspections and boardings; it relies on vessel data from the Vessel Documentation System



## MISLE Background Overview (cont'd)

### MISLE components (cont'd)

- **Vessel Identification and Documentation System**  
a system planned to integrate two subsystems in response to Public Law 100-710 (commonly called the Ship Mortgage Act of 1988):
  - *Vessel Identification System*—planned to automate and integrate vessel registration information from participating states; due to complications in implementing this system, USCG no longer plans to provide VIS functionality as part of MISLE (see Key Risk Area—System Requirements)
  - *Vessel Documentation System (VDS)*—a system to support the National Vessel Documentation Center's processes for documenting vessels
- **Law Enforcement Information System II (LEIS-II)**  
a system for tracking USCG law enforcement activities, such as drug interdiction activities; due to the age of the LEIS-II platform, USCG now plans to replace LEIS-II rather than integrate it with MISLE



## MISLE Background Overview (cont'd)

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As of early September 2001, USCG's estimates for MISLE costs and deployment schedules included the following:

- Acquisition cost: \$61 million through 2003
- Life cycle cost: \$94 million through 2008
- Initial capability: November 2001
- Final capability: September 2003



## MISLE Background History

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In 1986, USCG began developing requirements for replacing its legacy Marine Safety Information System (MSIS) by 1995.

In the early 1990s, USCG delayed plans to replace MSIS in order to integrate requirements for multiple systems into one system development effort—called MISLE.

In 1995, USCG awarded a contract to Computer Sciences Corporation (CSC) to develop and deliver a complete MISLE system by 2002. At that time, USCG officials estimated that this contract could cost up to \$35 million.

- A March 1999 change required the developer to replace MSIS functions by June 2001.



## MISLE Background History (cont'd)

The MISLE development contract encountered escalating costs and schedule delays; it was “partially terminated for government convenience” in October 1999.

- CSC delivered two components under this contract:
  - Vessel Identification System—a system to automate and integrate vessel registration information from participating states. This system was never implemented due to problems in integrating state data. USCG no longer plans to provide VIS functionality as part of MISLE.
  - Mission Analysis and Planning—a decision support tool for obtaining statistical information from the legacy MSIS system
- Total spent on the CSC contract: \$26 million

In October 1999, USCG transferred responsibility for MISLE development from CSC to its Operations Systems Center (OSC)—a government-owned, contractor-operated facility. USCG's acquisition office manages the project.





## **MISLE Background Acquisition Strategy**

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OSC's strategy is to develop and deploy a minimal level of MISLE functionality as soon as possible to replace MSIS.

- MSIS—once scheduled for termination in 1995—is still serving as the primary information system for marine safety programs.
- MSIS has failed repeatedly over the past several years, causing days and weeks of data processing backlogs.
- USCG officials stated that MSIS hardware is no longer supportable; the original vendor is no longer in business, and the agency is currently reusing parts to keep the system running.



## MISLE Background Acquisition Strategy (cont'd)

OSC's system development approach:

- **Rapid Application Development/Joint Application Design**  
a system development methodology that focuses on involving users early and often in the design and development of a system in order to develop it quickly.
- **Timebox Methodology**  
a system development methodology, often used in conjunction with the Rapid Application Development methodology, in which a time limit is established for developing a system (this forces users to focus on a minimal set of requirements and allows them to drop some functions if necessary to meet the time limit).



## MISLE Background Planned Delivery Schedule

OSC's three-phased delivery approach:

### **MISLE Phase 1**

*Oct. 1999 to Nov. 2001*

Deliverables:

- initial MSN capability needed to replace MSIS
- initial VDS capability

### **MISLE Phase 2**

*Feb. 2001 to March 2002*

Deliverables:

- replacement of LEIS-II
- extended MSN and VDS capabilities
- initial data warehouse

### **MISLE Phase 3**

*Feb. 2002 to Sept. 2003*

Deliverables:

- completion of remaining MSN and VDS capabilities
- expanded data warehouse



## MISLE Status and Plans Progress to Date

### MISLE Phase 1

40 high level requirements have been translated to over 13,000 detailed software requirements supporting two key components: the Marine Safety Network (MSN) and the Vessel Documentation System (VDS)

#### MSN Status:

- Completed system testing<sup>1</sup>
- User input obtained throughout

#### VDS Status:

- Major components postponed to later releases
- Completed system testing

### MISLE Phase 2

Development began February 2001

<sup>1</sup>USCG tests increasingly larger portions of MISLE in stages: (1) unit testing--informal tests of software modules; (2) functional testing--formal tests of software modules; (3) integration testing--testing the integration of all modules in a core area; and (4) system testing--testing all of the core areas in a deliverable. MISLE then undergoes operational test and evaluation (OT&E)--testing of operational effectiveness and suitability by system users.



## MISLE Status and Plans Costs

USCG's \$61 million total estimated MISLE acquisition cost includes:

- about \$7 million spent on requirements analysis, design, and validation in the early 1990s
- \$26 million spent on the 1995 MISLE contract that was terminated
- about \$28 million for current MISLE development efforts, including
  - almost \$17 million spent through fiscal year 2001 to develop
    - most of MISLE Phase 1
    - part of MISLE Phase 2
  - about \$11 million in fiscal year 2002 and beyond
    - to complete residual tasks supporting MISLE Phases 1 and 2
    - to develop and implement MISLE Phase 3



## MISLE Status and Plans Schedule

MISLE Phase 1 has fallen behind schedule.

MISLE Phase 1 milestones	Dec. 1999 baseline change <sup>a</sup>	June and Dec. 2000 estimates <sup>b</sup>	May 2001 estimate	Aug. 1, 2001 estimate	Sept. 5, 2001 estimate
System testing complete	N/I <sup>c</sup>	N/I	7/20/01	MSN 8/15/01 VDS 9/15/01	MSN 8/27/01 VDS 8/27/01
Operational Test and Evaluation complete	6/01	2/01	8/15/01	MSN 8/30/01 VDS 9/30/01	MSN 9/21/01 VDS 9/21/01
MISLE month complete	N/I	N/I	9/15/01	9/30/01	10/19/01
Data migration complete	N/I	N/I	9/30/01	10/10/01	11/2/01
MISLE Phase 1 deployed	N/I	4/01	10/01	10/15/01	11/5/01

<sup>a</sup>In commenting on a draft of this briefing, the MISLE project manager noted this baseline document also includes an OT&E completion range from January to September 2001, and that OT&E would be completed within this range. However, USCG internal management reports reflect the June 2001 completion date. In fact, these reports show MISLE in breach of its schedule.

<sup>b</sup>These estimates are identified in the June 2000 MISLE Implementation Plan, as well as the December 2000 MISLE Acquisition and Project Management Plans. In commenting on a draft of this briefing, USCG officials characterized these documents as internal, optimistic project plans--not firm schedule estimates.

<sup>c</sup>Not identified.



## MISLE Status and Plans Schedule (cont'd)

USCG officials identified the following reasons for schedule delays:

- Problems in integrating VDS and MSN components caused a major VDS redesign (October 2000)
- USCG needed to retrofit MSN to work with the current version of Internet Explorer (January 2001)
- VDS functional testing was delayed because of system instability (January 2001)
- MSN integration testing identified a missing function (June 2001):
  - ability to communicate with USCG's financial center
- VDS integration testing encountered problems (July 2001):
  - test scripts would not run at users' facility
  - shortcoming in ability to edit MSIS data migrated to MISLE (estimated 4 week delay)



## Key Risk Areas

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The MISLE acquisition is facing considerable challenges in the following key risk areas:

- System Requirements
- Software Testing
- Transition Planning
- Risk Management





## Key Risk Areas

### System Requirements

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System requirements define the minimum functions and performance levels needed to satisfy user needs. USCG identified system requirements for MISLE in 1994. Also, when the agency restructured the MISLE program in 1999, it identified specific functions to be delivered in each of the three MISLE phases.

However, MISLE requirements and the functions to be provided in each of the three deliverables are now changing. USCG plans to drop several of MISLE's original system requirements and has recently postponed key functions due to problems encountered during testing and the agency's need to field a system quickly. Also, in response to system users' needs, USCG plans to add and accelerate key functions. Further, while testing and training on the system, users identified new and missing functions which USCG plans to add to MISLE later.

USCG's plans for dropping, delaying, accelerating, and adding functions are discussed below.



## Key Risk Areas

### System Requirements (cont'd)

#### USCG is planning to drop significant MISLE requirements:

- **Vessel Identification System**—This system, planned to automate states' vessel registration data and integrate it with data on federally documented vessels in response to the Ship Mortgage Act of 1988, was developed as part of MISLE but never successfully implemented. USCG is considering developing a new system outside MISLE.
- **Portable/Remote Access**—This function was planned to provide the ability to access MISLE information from remote locations, such as Coast Guard cutters. USCG officials stated that MISLE will allow for remote access via laptop and dial-up modem, but that providing cutter connectivity will require decisions on the USCG infrastructure that are beyond MISLE's scope. USCG is considering leasing satellite time to provide cutter connectivity.



## Key Risk Areas

### System Requirements (cont'd)

#### Dropped requirements (cont'd)

- **External Access**—This function was planned to provide non-USCG personnel with access to MISLE data. USCG officials stated that MISLE has this capability but will not provide external access because of security concerns. USCG plans to reassess the need for external access on a case-by-case basis.
- **Merchant Mariner Licensing and Documentation**—This function was to provide licensing and documentation capabilities within MISLE. However, instead of waiting for MISLE, USCG decided to develop a stand-alone system to provide this capability. MISLE Phase 1 is planned to link to the Merchant Mariner Licensing and Documentation stand-alone system.



## Key Risk Areas

### System Requirements (cont'd)

#### Dropped requirements (cont'd)

- **Pollution Funds Management**—This function was to provide the ability to manage pollution funds within MISLE. Instead, USCG developed an alternative system outside MISLE to provide this functionality. MISLE will provide a link to that system.
- **Personnel Resource Management**—This function was to provide the ability to manage personnel within MISLE. Instead, USCG developed an alternative system outside MISLE to provide this functionality. USCG officials expect that MISLE will be able to access data in that system.



## Key Risk Areas System Requirements (cont'd)

### **USCG has delayed some MISLE functions:**

Significant Phase 1 deliverables are now planned for later releases.

Examples include VDS' ability to

- provide Abstracts of Titles
- provide Certificates of Ownership
- automate NVDC's paper-intensive work processes

Key Phase 2 deliverables are now planned to be Phase 3 deliverables.

Two high priority examples include

- VDS' ability to handle requests for nonvessel information (this involves non-U.S. corporations and oil spill response organizations)
- MSN's ability to capture information on the approval and oversight of the construction of portable quarters on vessels



## Key Risk Areas

### System Requirements (cont'd)

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#### Delayed functions (cont'd)

Other Phase 2 deliverables are being reconsidered—that is, USCG reported that they may not be “doable” in Phase 3. Examples include MSN’s ability to

- submit Web forms, such as vessel arrival, inspection request, and marine event application forms
- capture and track information on reviews of manuals (such as Operations Manuals, Emergency Evacuation Plans, and Passenger Terminal Security Plans)

Other examples include VDS’ ability to

- provide electronic access to data in response to FOIA requests
- allow e-commerce, such as credit card transactions and submission of Web forms



## Key Risk Areas System Requirements (cont'd)

### **USCG has added and accelerated MISLE functions:**

In response to user needs, USCG has decided to

- replace LEIS-II in Phase 2, rather than integrate it with MISLE
- accelerate a critical function, incident response planning, from Phase 3 to Phase 2

In commenting on a draft of this briefing, USCG officials noted that the agency has also moved multiple functions from Phase 2 to later releases of Phase 1 in response to user requests to get these functions sooner. However, in prior discussions, USCG officials acknowledged that they have not yet scheduled these later releases and, in fact, some of the later Phase 1 releases may not be delivered until after Phase 2 is delivered.



## Key Risk Areas System Requirements (cont'd)

### USCG plans to add functions to MISLE

While testing and training on MISLE, system testers and users are identifying both needed system corrections and new user needs that MISLE does not currently provide. USCG plans to add these functions to MISLE as “future enhancements.”

- As of August, USCG identified 72 future enhancements. Examples include
  - making vessel details on maps readable
  - incorporating data from additional information systems outside MISLE
  - making a print icon work

In commenting on a draft of this briefing, MISLE project officials stated that these future enhancements are low-level requirements and user preferences, and that they do not jeopardize the project’s ability to deliver on its agreed-upon scope.





## Key Risk Areas

### System Requirements (cont'd)

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USCG has developed a schedule for the functions that it deems are the highest priority—MSN release 1.1 and 1.2, and MISLE Phase 2. However, USCG has not yet prioritized all of the additional and delayed MISLE functions, nor has it developed schedules for providing them. For example, USCG has not yet established a schedule for delivering the significant VDS functions that were deferred from Phase 1 to the VDS release 1.1, or for the many other MSN and VDS functions anticipated in later releases of Phase 1.

By dropping and/or delaying key MISLE functions, USCG runs the risk that the system will not function as intended or expected, and that the deployed system will fall short of user needs. Further, without a schedule or cost estimate for the delayed functions and enhancements, it is not clear when these functions will be implemented nor how much it will cost to implement them.



## Key Risk Areas Software Testing

According to leading information technology organizations, to be effective, software testing practices should be planned and conducted in a structured and disciplined fashion. Typically, this involves testing increasingly larger increments of a system until the complete system is tested and accepted, and resolving critical problems before moving to the next phase of testing.

USCG policies call for

- testing MISLE software in successively larger increments<sup>2</sup>
  - unit testing
  - functional testing
  - integration testing
  - system testing
  - operational test and evaluation (OT&E)
- managing problems reported during testing:
  - problem reports are to be prioritized in levels 1 to 5 (levels 1 and 2 are most critical), fixed, tested, and closed
  - all critical problem reports (levels 1 and 2) are to be closed before the next stage of testing begins

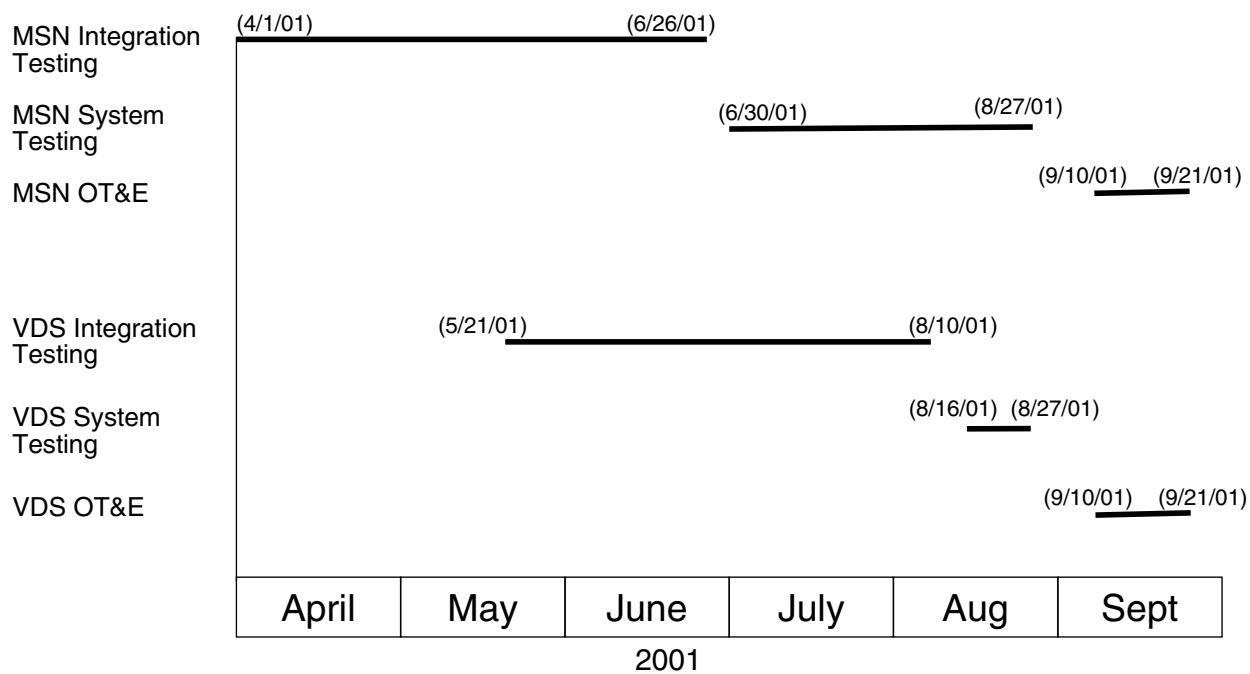
<sup>2</sup>We define similar concepts in our guide for managing testing activities, *Year 2000 Computing Crisis: A Testing Guide* (GAO/AIMD-10.1.21, November 1998).



## Key Risk Areas

### Software Testing (cont'd)

USCG's current testing schedule for MISLE components:





## Key Risk Areas

### Software Testing (cont'd)

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USCG has undertaken risky testing practices:

- Key VDS functions were not tested during functional testing because they were under development at the time and were deferred to integration testing. For example:
  - system security
  - processing and printing Abstracts of Titles
  - printing Certificates of Documentation



## Key Risk Areas

### Software Testing (cont'd)

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#### Risky testing practices (cont'd):

- Significant problems were not closed before the next stage of testing began. For example:
  - 9 critical problems identified during MSN integration testing were not closed before system testing began

USCG's testing practices increase the risk that MISLE will not perform as expected, or may take longer to develop than expected.



## Key Risk Areas

### Transition Planning

According to the CIO Council's guidance on enterprise architectures, agencies should carefully plan the transition from legacy systems to new systems. To ease the transition from MSIS to MISLE, USCG developed a transition plan that calls for developing data migration plans and training system users.

USCG has acknowledged that transitioning from MSIS to MISLE will be difficult. It will involve moving data from one system to the next, ensuring the accuracy of the transported data, and training users on new business processes. USCG has undertaken several transition efforts:

- MSN data migration plan has been developed
- Hundreds of MSN users have undergone training
- A 4-week period, known as MISLE month, is planned in which MSIS and MISLE will be run concurrently to allow MSN users to become acquainted with the new system and new work processes



## Key Risk Areas

### Transition Planning (cont'd)

Despite its transition guidance, USCG has not yet completed critical VDS transition planning because the initial system deliverables changed dramatically in July 2001. Specifically,

- VDS transition plan has not been finalized
- VDS training plan has not been developed
- VDS users have not been trained

VDS users stated that training and transition planning are not critical for the first release of VDS, because the functions being delivered will not dramatically affect their operations. However, they acknowledge that transition and training are critical to the next software release,<sup>3</sup> which is planned to reengineer and automate their work processes.

Incomplete plans for transitioning to a new system increase the likelihood that the system will not be deployed on schedule. Insufficient training plans also increase the likelihood that users will not readily adapt to new work processes and systems.

<sup>3</sup>USCG has not yet scheduled the next software release for VDS.



## Key Risk Areas

### Risk Management

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Risk management is a key component of a sound systems development approach. An effective risk management approach typically includes identifying, prioritizing, resolving, and monitoring project risks. In support of this approach, USCG's risk management plan calls for

- assigning a severity rating (high, medium, or low) to risks that bear particular attention and placing these risks on a "risk watch list,"
- prioritizing these risks,
- planning a response or strategy for each risk on the risk watch list, and drafting a detailed response plan, and
- reviewing and evaluating all risks on the the risk watch list during monthly management meetings.





## Key Risk Areas Risk Management (cont'd)

USCG has not effectively implemented its risk management plan.

- USCG developed three different risk lists, and none of the risks were assigned a severity rating.
- Risks on two of the risk lists have not been prioritized.
- USCG developed detailed mitigation strategies for some, but not all risks. For example,
  - detailed plans exist for data migration and transition risks
  - such plans do not exist for managing user expectations and VDS instability risks
- USCG officials addressed some, but not all, active risks at monthly status briefings. Additionally, USCG officials stated that they discuss all active risks during monthly management meetings; however, we found no evidence that all risks were addressed at these informal meetings.

Inadequate risk management practices increase the likelihood that MISLE will not be delivered on schedule, within budget, and able to perform as expected. USCG officials acknowledged areas where they could improve their risk management and have undertaken improvement efforts.



## Conclusions

After a long history of problems in developing MISLE, USCG ended the original MISLE contract in October 1999. Since that time, USCG has made progress in developing MISLE and is now poised to deploy a minimum level of functionality in November 2001. However, MISLE is several months behind schedule and USCG has already spent most of its \$61 million acquisition cost estimate--most of it on the original contract. With only about \$11 million remaining, much remains to be done.

In its efforts to develop and deploy a complete MISLE system, USCG faces significant challenges in several areas:

- managing system requirements and user expectations
- testing the system
- transitioning to an operational system, and
- managing program risks

Unless USCG can effectively address these challenges, MISLE deployment schedules are likely to slip further and costs are likely to increase. Further, MISLE may fall short of user expectations and its promised functionality.



## Recommendations

To mitigate MISLE risks, we are making several categories of recommendations to USCG's MISLE program managers:

### System Requirements

- Define and prioritize, in conjunction with system users, all needed system functions, corrections, and enhancements that must occur to meet valid user needs.
- Develop cost and schedule estimates for providing these functions, corrections, and enhancements.

### Software Testing

- Close all critical problems before initiating the next stage of testing.



## Recommendations (cont'd)

### Transition Planning

- Finalize and implement VDS transition plans.
- Develop and implement VDS training materials.

### Risk Mitigation

- Develop a single list of system risks.
- Evaluate system risks to determine their severity and prioritize these risks.
- Develop and implement comprehensive mitigation strategies for each of the risks.
- Regularly oversee the status of risks and risk mitigation efforts to determine whether additional mitigation activities are warranted.



## Agency Comments and our Evaluation

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In providing oral comments on a draft of this briefing, USCG officials generally agreed with our recommendations, but disagreed with our conclusion that unless the agency can address key risk areas, MISLE deployment schedules are likely to slip further, costs are likely to increase, and MISLE may fall short of user expectations and its promised functionality.

USCG officials stated that many of the changing requirements and testing issues we raised were “tradeoff” decisions made to meet the primary goal of delivering an initial version of MISLE to replace MSIS. Additionally, USCG officials stated that some MISLE functions were deferred to later releases in order to accelerate other user-requested functions. USCG officials expressed confidence that they will deliver MISLE within budget and on schedule.



## Agency Comments and our Evaluation

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**Our evaluation:** We acknowledge that USCG expects to meet its primary goal of replacing MSIS in the next few months. However, MISLE will now provide fewer capabilities than originally planned, and significant functions have been delayed because of problems in testing.

By dropping and delaying key MISLE functions, USCG runs the risk that the system will fall short of user needs. Further, because there are no schedule or cost estimates for most of the delayed functions, it is not clear when they will be delivered or what they will cost.

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